LuminWave

# DM ToF 相机

快速操作手册

LWP-D322-I

LWP-D322C-I

LWP-D322W-I

**感谢您购买本产品，请妥善保管本指南以供查询使用。**

- ▸本快速操作指南主要包含 DM ToF 相机的基本信息、快速使用及装箱清单。
- ▸在使用设备之前，请确保您已阅读并理解了本指南的内容。
- ▸为了保障产品的正确安全使用，请通读本指南，特别要留意激光安全、注意事项两节的内容。
- ▸如需了解更多产品信息，需要技术支持，请访问官网(https://luminwave.com.cn)或联系相关技术 & 销售人员。

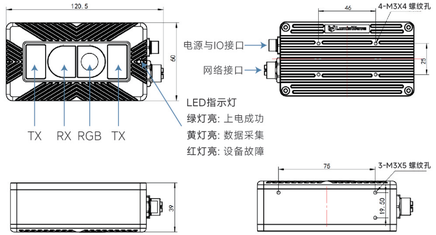
官网　官微


**杭州洛微科技有限公司**

**地址：** 浙江省杭州市滨江区江虹路 459 号英飞特大厦 B 座 12 层
**官网：** https://luminwave.com.cn
**电话：** 0571-85193787
**邮箱：** sales@luminwave.com

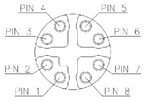

MADE IN CHINA

## 01 / 结构尺寸



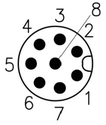

## 02 / 产品接口

1.网络接口：M12 X-code母头，适配通用的M12转RJ45的千兆网线。




| M12 X-code | 定义 | 对应 RJ45 线序 |
|---|---|---|
| PIN 1 | TD1+ | 白橙 |
| PIN 2 | TD1- | 橙 |
| PIN 3 | TD2+ | 白绿 |
| PIN 4 | TD2- | 绿 |
| PIN 5 | TD3+ | 白棕 |
| PIN 6 | TD3- | 棕 |
| PIN 7 | TD4+ | 白蓝 |
| PIN 8 | TD4- | 蓝 |

2.电源与IO接口：M8 A-code母头，公司提供标准2.5m电缆。




| M8 A-code | 定义 | 颜色 |
|---|---|---|
| PIN 1 | GND | 黑 |
| PIN 2 | VIN | 红 |
| PIN 3 | CANL | 棕 |
| PIN 4 | CANH | 绿 |
| PIN 5 | GPIO_OUT- | 白 |
| PIN 6 | GPIO_OUT+ | 黄 |
| PIN 7 | GPIO_IN- | 灰 |
| PIN 8 | GPIO_IN+ | 蓝 |

## 03 / 产品参数

| 产品型号 | | (标准视野版) LWP-D322-I LWP-D322-IS | (RGBD 版) LWP-D322C-I LWP-D322C-IS | (大视野版) LWP-D322W-I LWP-D322W-IS |
|---|---|---|---|---|
| 工作原理 | | ToF(Time-of-Flight)深度相机 | | |
| 传感器 | | Sony IMX570 | | |
| 激光器 | | 940(930~950)nmVCSEL*2 | | |
| * 工作距离 | | 0.2m~10m | | |
| 测距精准度 | | ±3mm+0.25%*depth | | |
| ToF 视场角(H*V) | | 70°*50° | | 103°*81° |
| ToF 分辨率 | | 640*480 dpi | | |
| RGB 分辨率 | | - | 1600*1200 dpi | - |
| 帧率 | | 标准模式 :Max 28fps　高速模式 :Max 56fps | | |
| 人眼安全 | | Class 1 | | |
| 功能 | HDR 功能 | 普通 HDR、高精度 HDR | | |
| | 曝光时间 | 0-4000μs 曝光时间调整 | | |
| | 滤波器 | 支持空间、时域、置信度、飞点多种滤波器设置 | | |
| | 输出数据类型 | Depth、IR、PointCloud、IMU | Depth、IR、PointCloud、IMU、RGB(YUV) | Depth、IR、PointCloud、IMU |
| 供电 | 供电 | DC12V-24V | | |
| | 功耗 | <10W | | |
| | 网络接口 | M12，8-pin; X-coded; female | | |
| | * 电源与 I/O 接口 | M8，8-pin; A-coded; female | | |
| 物理 | * 尺寸(L*W*H) | 108mm x39mm x 60mm | | |
| | 重量 | 366g | | |
| | * 工作温度 | -30℃ ~ 65℃ | | |
| | 存储温度 | -40℃ ~ 85℃ | | |
| | 防护等级 | IP67 | | |
| 系统支持 | | Windows 10 及以上 /Ubuntu 20.04 及以上 /Ros | | |

*尺寸：设备主体尺寸。
*工作温度：极限工作温度下可能会影响产品性能，如有此类需求，请先咨询我司技术人员。
*电源与 I/O接口：请保证设备的供电电压在 7-24.8VDC范围内，超出此范围将会影响设备正常启动。
*工作距离：默认为 0.2-5m，10m版请联系我司销售人员定制。

## 04 / 装箱清单

打开产品包装后，请确认DM ToF相机是否完好，请对照以下清单确认配件是否齐全,若有缺失或损坏，请尽快联系销售人员。

| 名称 | 数量 | 名称 | 数量 |
|---|---|---|---|
| DM ToF 相机 | ×1 | 零件包 | ×1 |
| 2.5m 电源线 | ×1(标配) | 快操说明书 | ×1 |
| 1.5m 测试网线 | ×1(选配) | 合格证 | ×1 |
| DC 电源母头 | ×1(5.5*2.1mm) | 转接支架 | ×1(仅 S 版本) |

注：电缆标配 2.5m 电源线，M12 X-code 转 RJ45 网线需单独购买(可选 1.5m、5m、13m)。

## 05 / 快速使用

1.使用前请取下光窗保护膜。
2.通过千兆网线将ToF相机与电脑端相连。
3.通过电源线给ToF相机提供12V、5A的电源。
4.LED指示灯绿灯亮，显示成功通电后进行网络配置。
5.ToF相机默认IP地址为192.168.1.200，可通过上位机软件LuminViewD更改默认IP地址。
6.电脑端IP地址需要与ToF相机设置在同一网段。
7.电脑端子网掩码设置为255.255.255.0。
8.在Window 10及以上环境下运行上位机LuminViewD,扫描并连接ToF相机。
9.按照LuminViewD和SDK使用说明,开始使用ToF相机。

## 06 / 软件获取

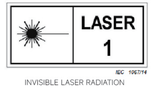
配套软件LuminViewD和SDK的获取方式与两种：

| | |
|---|---|
| 方式一 | 访问洛微科技官网https://luminwave.com.cn下载 |
| 方式二 | 联系销售人员获取 |

## 07 / 激光安全

本产品激光安全等级符合IEC60825-1：2014标准,请遵循相应的激光安全指示，使用规定以外的控制或调整或执行程序可能导致辐射伤害。

本产品符合21 CFR 1040.10和 1040.11标准，除2019年5月8日颁发的第56号激光公告(LaserNoticeNo.56)所述之偏差事项(IEC 60825-1 第三版) 外。




## 08 / 注意事项

1.使用设备前请务必取下光窗保护膜。
2.请勿损坏或去除产品上的标签。
3.请勿用手触摸光窗,以免光窗沾上指印或污物。
4.请避免用坚硬或锋利物体接触光窗,以免光窗产生划痕。
5.请避免在带电状态下插拔网线及电源线,以免造成产品损坏。
6.未经洛微科技书面同意,禁止拆卸产品。
7.请勿在任何存在潜在爆燃性空气的区域使用产品。

## 09 / 责任声明

1. 在法律允许的最大范围内，本指南所描述的产品按照现状提供，可能存在瑕疵、错误或故障，本公司不提供任何形式的明示或默示保证，包括但不限于适销性、质量满意度、适合特定目的、不侵犯第三方权利等保证；亦不对使用本指南或使用本公司产品导致的任何特殊、附带、偶然或间接的损害进行赔偿，包括但不限于商业利润损失、数据或文档丢失产生的损失。
2. 若您将产品接入互联网需自担风险,包括但不限于产品可能遭受网络攻击、黑客攻击、病毒感染等,本公司不对因此造成的产品工作异常、信息泄露等问题承担责任,但本公司将及时为您提供产品相关技术支持。
3. 使用本产品时,请您严格遵循适用的法律。若本产品被用于侵犯第三方权利或其他不当用途,本公司概不承担任何责任。
4. 如本说明书内容与适用的法律相冲突,则以法律规定为准。

LuminWave

# DM ToF Cameras

Quick Operation Manual

LWP-D322-I

LWP-D322C-I

LWP-D322W-I

Thank you for purchasing this product and please keep this guide for your reference.

- ►This Quick Operation Guide contains basic information about the DM ToF cameras, quick operation instructions and a packing list.
- ►Please make sure you have read and understood the contents of this guide before using the equipment.
- ►To ensure proper and safe use of the product, please read this guide, paying particular attention to the sections on laser safety and precautions.
- ►For more product information and technical support, please visit the website (www.luminwave.com) or contact the relevant technical & sales staff.

Website　　Whats App


**Hangzhou LuminWave Technology Co., Ltd**

**ADD:** 12/F,B/ B., INVENTR Bdg., No. 459 Jianghong Rd., Binjiang Dist., Hangzhou, Zhejiang Prov., China

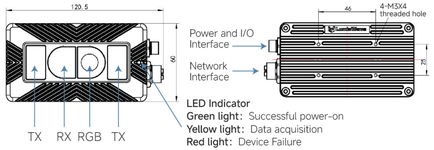
**Mail:** sales@luminwave.com

**WA:** +86 19157800366

**Web:** www.luminwave.com

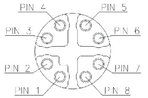

MADE IN CHINA

## 01 / Dimensions



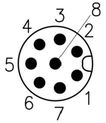

## 02 / Connectors

**1. Network Interface:** M12 X-code female connector, compatible with universal M12 to RJ45 gigabit Ethernet cable.




| M12 X-code | Definition | Cable Color |
|---|---|---|
| PIN 1 | TD1+ | White Orange |
| PIN 2 | TD1- | Orange |
| PIN 3 | TD2+ | White Green |
| PIN 4 | TD2- | Green |
| PIN 5 | TD3+ | White Brown |
| PIN 6 | TD3- | Brown |
| PIN 7 | TD4+ | White Blue |
| PIN 8 | TD4- | Blue |

**2.Power and IO Interface:** M8 A-code female connector, we provide standard 2.5m cable.




| M8 A-code | Definition | Cable Color |
|---|---|---|
| PIN 1 | GND | Black |
| PIN 2 | VIN | Red |
| PIN 3 | CANL | Brown |
| PIN 4 | CANH | Green |
| PIN 5 | GPIO_OUT- | White |
| PIN 6 | GPIO_OUT+ | Yellow |
| PIN 7 | GPIO_IN- | Gray |
| PIN 8 | GPIO_IN+ | Blue |

## 03 / Specifications

| Product Number | | (Standard FoV) LWP-D322-I LWP-D322-IS | (RGBD) LWP-D322C-I LWP-D322C-IS | (Wide FoV) LWP-D322W-I LWP-D322W-IS |
|---|---|---|---|---|
| Operating Principle | | ToF(Time-of-Flight)Depth Camera | | |
| Sensor | | Sony IMX570 | | |
| Laser | | 940(930-950)nmVCSEL*2 | | |
| * Working Distance | | 0.2m~10m | | |
| Ranging Accuracy | | ±3mm+0.25%*depth | | |
| ToF Field of View(H x V) | | 70°*50° | | 103°*81° |
| ToF Resolution | | 640*480 dpi | | |
| RGB Resolution | | - | 1600*1200 dpi | - |
| Frame Rate | | Standard mode: Max 28fps High speed mode: Max 56fps | | |
| Human Eye Safety | | Class 1 | | |
| Function | HDR Function | Normal HDR, High-precision HDR | | |
| | Exposure Time | 0-4000μs exposure time adjustment | | |
| | Filters | Support multiple filter settings including spatial, temporal, confidence, and fly point filters | | |
| | Output Data Type | Depth、IR、PointCloud、IMU | Depth、IR、PointCloud、IMU、RGB(YUV) | Depth、IR、PointCloud、IMU |
| Interface | Power Supply | DC12V-24V | | |
| | Power Consumption | <10W | | |
| | Network Interface | M12, 8-pin; X-coded; female | | |
| | * Power and I/O Interface | M8, 8-pin; A-coded; female | | |
| Physics | * Dimensions(L*W*H) | 108mm x39mm x 60mm | | |
| | Weight | 366g | | |
| | *Operating Temperature | -30℃ ~ 65℃ | | |
| | Storage Temperature | -40℃ ~ 85℃ | | |
| | Protection Class | IP67 | | |
| Supported System | | Above Windows 10/ Above Ubuntu 20.04/ Ros | | |

*Dimensions: Dimensions of the main body.
*Operating Temperature: Extreme operating temperatures may affect product performance. If you have such requirements, please consult our technical staff first.
*Power and I/O Interface: Ensure that the device's power supply voltage is within the range of 7-24.8VDC. Voltage outside this range will affect the device's normal startup.
*Working Distance: The default range is 0.2~5m; for a 10m version, please contact our sales staff for customization.

## 04 / Packing List

After opening the package, please make sure that the DM ToF camera is intact, please check the following list to make sure that the accessories are complete, if there is any missing or damaging, please contact the sales staff as soon as possible.

| Name | Quantity | Name | Quantity |
|---|---|---|---|
| DM ToF camera | ×1 | Parts kit | ×1 |
| 2.5m Power Cable | ×1(standard) | Quick Operation Guid | ×1 |
| 1.5m Test Network Cable | ×1(option) | Certificate of Conformity | ×1 |
| DC power female connector | ×1(5.5*2.1mm) | Transfer bracket | ×1(Only S version) |

Note: A 2.5m power cord is default , and M12 X-code to RJ45 network cables need to be purchased (optional 1.5m, 5m, 13m).

## 05 / Quick Use

1. Remove the protective film from the optical window before use.
2. Connect the ToF camera to the computer via a Gigabit Ethernet cable.
3. Provide 12V, 5A power to the ToF camera through the power cable.
4. The LED indicator lights up green to show the successful power-on and network configuration.
5. The default IP address of ToF camera is 192.168.1.200, you can change the default IP address through the software LuminViewD.
6. The IP address of the computer needs to be set in the same network segment with the ToF camera.
7. The subnet of the computer is 255.255.255.0.
8. Run the LuminViewD software in Window 10 and above environment, scan and connect to the ToF camera.
9. Follow the instructions of LuminViewD software and SDK to start using ToF camera.

## 06 / Get Software

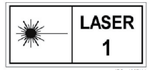
The software LuminViewD and SDK can be obtained in the following ways:

| | |
|---|---|
| Way 1 | Visit the official website: www.luminwave.com |
| Way 2 | Contact our sales staff. |

## 07 / Laser safety

This product is in accordance with IEC 60825-1:2014. Please follow the appropriate laser safety instructions .

This product complies with 21 CFR 1040.10 and 1040.11, except as described in Laser Notice No. 56, issued on 8 May 2019 (IEC 60825-1 3rd edition).




INVISIBLE LASER RADIATION

## 08 / Cautions

1. Make sure to remove the protection film on the optical window before using the device.
2. Do not damage or remove the labels on the product.
3. Do not touch the optical window with your hands to avoid fingerprints or dirt on the window.
4. Avoid touching the optical window with hard or sharp objects to avoid scratches on the window.
5. Avoid plugging and unplugging the network cable and power cord during the working status, so as not to cause damage to the product.
6. It is prohibited to disassemble the product without the written permission from our company.
7. Do not use the product in any area where potentially explosive atmospheres exist.

## 09 / Disclaimer of Liability

1. To the fullest extent permitted by law, the products described in this guide are provided "as is" and may contain defects, errors or failures, and the company disclaims all warranties of any kind, either express or implied, including, but not limited to, the warranties of merchantability, satisfactory quality, fitness for a particular purpose, and non-infringement of third-party rights; and shall not be liable for any special, incidental, occasional or consequential damages arising from the use of the guide or the use of the company's products. nor shall it be liable for any special, incidental, consequential or indirect damages arising out of the use of this guide or the use of the company's products, including, but not limited to, damages for loss of business profits, loss of data or documentation.

2. If you connect the product to the Internet at your own risk, including but not limited to the product may be subjected to network attacks, hacker attacks, virus infection, etc., the company will not be responsible for the product work abnormality, information leakage and other problems caused by the product, but the company will provide you with technical support for the product.

3. When using this product, please strictly follow the applicable laws. If this product is used to infringe the rights of third parties or for other improper purposes, the company shall not be liable for any responsibility.

4. In case of conflict between the contents of this manual and the applicable laws, the provisions of the laws shall prevail.